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Future changes in Extreme Climate Indices in the Middle East and North Africa (MENA) by Using RegCM4.3.5

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In this study, projected future changes in extreme climate indices for the period 2071-2100 over the Middle East and North Africa (MENA) with respect to present climate (from 1971 to 2000) were investigated based on the RCP4.5 and RCP8.5 emission scenarios. HadGEM2 global climate model of the Met Office Hadley Centre and MPI-ESM-MR global climate model of the Max Planck Institute for Meteorology were downscaled to 50 km by using regional climate model (RegCM4.3.5) of the International Centre for Theoretical Physics (ICTP). Climate extremes indices defined by the Expert Team on Climate Change Detection and Indices (ETCCDI) were used in this study. Model results show increase in heat extremes. A strong decrease in precipitation amounts is projected in the domain according to the outputs of the regional model. Increases in future change of the annual number of hot days and warm nights, and decreases in cool days and cold nights were projected. Therefore, resultant more frequent and severe extreme weather events very likely adversely affect the human health, ecological and socio-economic systems of MENA region.